No. 7800007

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

COMMON WHEAT

'S78'

PLANT VARIETY PROTECTION OFFICE · U.S. DEPARTMENT OF AGRICULTURE

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 24th *day of* September *in the year of our Lord one thousand nine hundred and* eighty-one.

*Attest:*

Leonard L. Kelley
*Commissioner*
*Plant Variety Protection Office*
*Grain Division*

John R Block

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

**INSTRUCTIONS:** *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

| 1a. TEMPORARY DESIGNATION OF VARIETY | 1b. VARIETY NAME | FOR OFFICIAL USE ONLY |
|---|---|---|
| W595 | S78 | PV NUMBER 18 000 07 |
| 2. KIND NAME: Wheat | 3. GENUS AND SPECIES NAME: Triticum aestivum | FILING DATE 11/21/77 — TIME 3:30 A.M. (P.M.) |
| 4. FAMILY NAME (BOTANICAL): gramineae | 5. DATE OF DETERMINATION: July 1, 1974 | FEE RECEIVED $500.00 $250.00 — DATE 11/21/77 8/27/81 |

| 6. NAME OF APPLICANT(S) | 7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*) | 8. TELEPHONE AREA CODE AND NUMBER |
|---|---|---|
| Pioneer Hi-Bred International, Inc.<br>Plant Breeding Division | Department of Cereal Seed Breeding<br>Rt. 2<br>Hutchinson, Kansas 67501 | 316/662-5439 |

| 9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*) | 10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION | 11. DATE OF INCORPORATION |
|---|---|---|
| Corporation | Iowa | May, 1926 |

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:
Dr. Charles Hayward
Pioneer Hi-Bred International, Inc.
Rt. 2
Hutchinson, Kansas 67501

13. **CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:**

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [ ] YES [X] NO

| 14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? | 14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? |
|---|---|
| [ ] YES [ ] NO | [ ] FOUNDATION [ ] REGISTERED [ ] CERTIFIED |

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

March 19, 1981 (DATE) — Charles F. Hayward (SIGNATURE OF APPLICANT)

March 19, 1981 (DATE) — * Dale L. Porter (Jr.) (SIGNATURE OF APPLICANT)



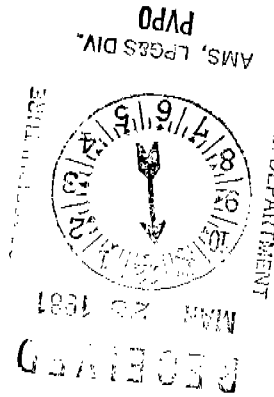
FORM GR-470 (1-78) *Legal representative for Pioneer Hi-Bred International, Inc.

# INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and $500 fee ($250 filing fee and $250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.




13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.

14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)

15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

13A. Exhibit A. Origin and Breeding History of S78 Wheat

S78 was developed by Pioneer Hi-Bred International, Inc., Plant Breeding Division, Department of Cereal Seed Breeding, Rt. 2, Hutchinson, Kansas.

The abbreviated parentage of S78 is: Etoile de Choisy//Thorne/Clarkan/3/CI15342/4/Purdue 4946A4-18-2. A semidwarf mutant was selected from the Etoile de Choisy//Thorne/Clarkan cross and this mutant was crossed to CI15342. A pure line selection from this cross was crossed to P4946A4-18-2 in 1967.

Procedure in developing S78 from the time of the final cross is as follows:

1967.....$F_1$ generation.

1968.....$F_2$ generation space planted and plant selections made.

1969.....$F_3$ generation, plant selections grown in increase rows in Illinois. Head selections were taken from the increase rows.

1970.....$F_4$ generation, headrows grown in Illinois.

1971.....$F_5$ generation, increase rows were grown from selected 1970 headrows in Missouri.

1972.....$F_6$ generation, seed from selected increase rows planted in preliminary yield trials in Kansas, Missouri and Indiana. Quality evaluations were made by our cereal chemist.

1973.....$F_7$ generation, best performing lines from the preliminary yield trials were grown in advanced yield trials in Kansas, Missouri and Indiana. Milling and baking studies of the Missouri and Indiana tests were conducted by two independent laboratories as well as our own.

1974.....$F_8$ generation, the best performing lines, based on field and milling and baking quality data, were grown in elite yield trials in Kansas, Missouri, Illinois and Indiana. Quality evaluations were continued. The line W595 was noted as being superior in both yield and lodging resistance.

13A. Exhibit A. (cont.)

1975.....$F_9$ generation, W595 and other top performing lines continued in elite yield trials with quality evaluations made. Preliminary increase of the line W595 was planted in the fall of 1975.

1976.....W595 grown in elite yield trials with quality evaluations continued. Parent seed planted increase of W595.

1977.....W595 grown in elite yield trials in Kansas, Missouri, Illinois and Indiana as well as in selected university yield trials. Pioneer laboratory continued quality testing of W595. An increase of W595 planted in Kansas, Missouri, Illinois, Indiana and Ohio in the fall of 1977. The name S78 was selected for line W595 with sales to begin in 1978.

Variants of S78 that can be expected are: a very small number of awnless or awnletted (1/1000) and a very small number of taller plants (1/1000). Uniformity can be expected since common wheat is recognized as almost completely self-pollinated.

'S78' is uniform and stable.

JB 7/24/81

13B. Exhibit B. Novelty Statement

S78 is most similar to the soft red winter wheat variety S76, but uniquely different.

S78 is distinct from S76 by being resistant to Hessian fly race B. Kernels of S78 are shorter and appear plumper (6 mm. long x 3 mm. wide) than kernels of S76 (7 mm. long x 3 mm. wide). Phenol reaction of S78 is light brown, whereas S76 gives a phenol reaction of dark brown to black.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
*(Wheat)*

# OBJECTIVE DESCRIPTION OF VARIETY
## WHEAT (*TRITICUM SPP.*)

**INSTRUCTIONS:** *See Reverse.*

NAME OF APPLICANT(S)

Pioneer Hi-Bred International, Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*

Plant Breeding Division
Department of Cereal Seed Breeding
Rt.2
Hutchinson, Kansas 67501

**FOR OFFICIAL USE ONLY**

PVPO NUMBER: 78000 07

VARIETY NAME OR TEMPORARY DESIGNATION: '578'

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

**1. KIND:**

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

**2. TYPE:**

[2] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____ [1] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

**3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:**

[2][3][0] FIRST FLOWERING [2][3][7] LAST FLOWERING

**4. MATURITY *(50% Flowering)*:**

[ ][ ] NO. OF DAYS *EARLIER* THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][3] NO. OF DAYS *LATER* THAN ..... [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

**5. PLANT HEIGHT *(From soil level to top of head)*:**

[0][8][8] CM. HIGH

[ ][ ] CM. TALLER THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][3] CM. SHORTER THAN ..... [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

**6. PLANT COLOR AT BOOTING *(See reverse)*:**

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

**7. ANTHER COLOR:**

[1] 1 = YELLOW 2 = PURPLE

**8. STEM:**

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES *(Originating from node above ground)*

[1][8] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

**9. AURICLES:**

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

**10. LEAF:**

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][2] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][1] CM. LEAF LENGTH *(First leaf below flag leaf)*:

13D. Additional Description of the Variety

S78 is a common soft red winter wheat, Triticum aestivum L.

S78 has averaged two days later than Arthur 71 in flowering date in yield trials in 1974-1977. At Tipton, Indiana, when seeded about October 1, the average first flowering is May 28 or about 230 days after emergence. Last flowering is about seven days later. It is recognized that environmental factors influence flowering of varieties differently.

S78 has averaged 88 cm. in height, about 3 cm. shorter than Abe (Table 1).

At booting, the plant color of S78 is dark green, similar to Beau.

Anther color of S78 is yellow like Arthur.

Anthocyanin has been absent in the stem of S78. A moderate to heavy waxy bloom occurs on the stem, becoming less apparent after flowering. Internodes of S78 are hollow. At maturity, stems are yellow and very strong, as evidenced by the small amount of lodging (Table 1). Normally four stem nodes are present above ground.

Auricles of S78 are glaborous and lacking in anthocyanin.

Leaves are dark green at booting. Flag leaves are generally recurved at booting. Flag leaves are not twisted. Hairs are absent on the first leaf sheath. The first leaf below the flag leaf averages about 12 mm. wide and 21 cm. long.

Spikes are mid-dense (lax), fusiform, awned, yellow and generally nodding at maturity. Awns are rough with the majority averaging 5 to 7 cm. in length.

Spike width and length averages 12 mm. and 10 cm., respectively. However, spike width and length are variable with plant population and level of production.

Glumes of S78 are mid-wide and mid-long, with oblique shoulders. Beaks are acuminate and 2 to 3 mm. long.

13D. Exhibit D. (cont.)

Seedling anthocyanin is present.

Kernels are red in color and ovate in shape, with rounded cheeks and a mid-deep crease. The ~~beak~~ brush 7/21/81 is not collared, medium in size and mid-long. The embryo is large in size. Kernels average 6 mm. long and 3 mm. wide and about 34 g. per 1000. The phenol reaction is light brown.

S78 is resistant to Hessian fly races GP, A, B, and E.

S78 is susceptible to loose smut, powdery mildew and stem rust. It has not been tested for stripe rust and bunt. S78 has not been tested for resistance to specific races of leaf rust, but has shown a moderate degree of resistance to the prevalent leaf rust races present in the areas where tested.

S78 has an excellent yield record when compared with currently grown soft red winter wheats (Table 1). Short plant height and excellent straw strength give S78 excellent resistance to lodging.

The milling and baking qualities of S78 generally are equal to slightly poorer than standard soft red winter wheat varieties currently being grown (Tables 2 and 3).

Table 1

Performance of S78 and standard varieties in elite yield trials

Average of four years, four states, 1974-1977

| | Height cm.(1) | Lodging %(2) | Leaf Rust(3) | Date Headed(4) | Yield bushels per acre | | | | Avg. Yield | Avg. Test Wt. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Kan. | Mo. | Ill. | Ind. | | |
| S78 (W595) | 88 | 26 | MR | 5/12 | 55.4 | 47.2 | 54.6 | 46.5 | 50.9 | 57.8 |
| S76 (W610) | 92 | 14 | MR | 5/13 | 51.3 | 45.3 | 50.8 | 45.4 | 48.2 | 58.4 |
| Arthur 71 | 94 | 51 | Tr R | 5/10 | 44.4 | 37.0 | 47.4 | 40.8 | 42.4 | 59.7 |
| Abe | 91 | 44 | Tr R | 5/10 | 51.0 | 38.2 | 49.6 | 44.1 | 45.7 | 58.7 |
| Oasis | 97 | 36 | Tr R | 5/10 | 46.4 | 38.7 | 47.0 | 41.5 | 43.4 | 59.6 |
| Stoddard | 107 | 26 | MR | 5/11 | 44.8 | 41.8 | 46.2 | 41.2 | 43.5 | 60.0 |
| Blueboy II | 103 | 33 | MR | 5/14 | 45.4 | 39.3 | 49.6 | 42.3 | 44.2 | 56.2 |

(1) Height in Kansas in 1974 and 1975; Kansas, Illinois and Indiana in 1976; Kansas, Missouri, Illinois and Indiana in 1977.

(2) Lodging in Illinois in 1974 and 1975; Kansas, Missouri and Indiana in 1977

(3) Leaf rust in Kansas only

(4) Date headed in Kansas in 1974 and 1975; Kansas and Illinois in 1976; Kansas, Illinois and Indiana in 1977

FORM GR-470-6 (REVERSE)

**11. HEAD:**

[1] Density: 1 = LAX 2 = DENSE

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* Fusiform

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: _____

[1][0] CM. LENGTH

[1][2] MM. WIDTH

**12. GLUMES AT MATURITY:**

[2] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[2] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

[1] 1 GLABROUS 2 PUBESCENT

[2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

**13. COLEOPTILE COLOR:**

[3] 1 = WHITE 2 = RED 3 = PURPLE

**14. SEEDLING ANTHOCYANIN:**

[2] 1 = ABSENT 2 = PRESENT

**15. JUVENILE PLANT GROWTH HABIT:**

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

**16. SEED:**

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[3] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)* _____

[0][6] MM. LENGTH [0][3] MM. WIDTH [3][4] GM. PER 1000 SEEDS

**17. SEED CREASE:**

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

**18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)**

[1] STEM RUST *(Races)* _____ [0] LEAF RUST *(Races)* _____ [0] STRIPE RUST *(Races)* _____ [1] LOOSE SMUT

[1] POWDERY MILDEW [0] BUNT [ ] OTHER *(Specify)* _____

**19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)**

[0] SAWFLY [0] APHID *(Bydv.)* [0] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER *(Specify)* _____

HESSIAN FLY RACES: [2] GP [2] A [2] B [1] C [1] D [2] E [1] F [1] G

**20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:**

| CHARACTER | NAME OF VARIETY | CHARACTER | NAME OF VARIETY |
|---|---|---|---|
| Plant tillering | S76 | Seed size | Beau |
| Leaf size | Beau (but wider) | Seed shape | Beau |
| Leaf color | Beau | Coleoptile elongation | S76 |
| Leaf carriage | S76 | Seedling pigmentation | Beau |

## INSTRUCTIONS

**GENERAL:** The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

**LEAF COLOR:** Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

S78 tends to be low in flour yield. In other quality factors, it is generally equal to slightly poorer than standard varieties and should not be a detriment to the quality of the SRW area.

Table 2

Results of Quality Testing on S78

1. Pioneer Quality Lab Results

| Avg. '72 Data | Flour Yield (%) | Break Flour (%) | Flour Protein (%) | AWRC (%) | Cookie Diam. (cm.) |
|---|---|---|---|---|---|
| S78 | 69.2 | 37.5 | 10.9 | 54.1 | 19.1 |
| Arthur 71 | 73.7 | 40.2 | 12.0 | 52.7 | 19.0 |
| Avg. Check | 72.6 | 41.2 | 11.5 | 51.9 | 19.0 |
| Avg. '73 Data | | | | | |
| S78 | 71.8 | 42.7 | 13.4 | 55.1 | 18.3 |
| Arthur 71 | 74.5 | 44.2 | 12.0 | 60.9 | 19.9 |
| Avg. Check | 73.5 | 43.0 | 12.7 | 53.0 | 19.1 |
| Avg. '74 Data | | | | | |
| S78 | 61.1 | 35.0 | 10.1 | 58.5 | 18.8 |
| Arthur 71 | 64.1 | 36.6 | 11.6 | 55.5 | 18.9 |
| Avg. Check | 65.0 | 37.4 | 11.1 | 55.0 | 19.1 |
| Avg. '75 Data | | | | | |
| S78 | 65.0 | 37.6 | 8.7 | 55.0 | 19.3 |
| Arthur 71 | 68.6 | 39.8 | 9.3 | 51.9 | 19.8 |
| Avg. Check | 68.4 | 39.3 | 9.3 | 53.0 | 19.6 |
| Avg. '76 Data | | | | | |
| S78 | 65.8 | 36.7 | 9.7 | 56.3 | 17.7 |
| Arthur 71 | 69.2 | 38.7 | 9.9 | 54.8 | 17.7 |
| Avg. Check | 67.7 | 37.2 | 9.6 | 54.8 | 17.9 |
| Avg. '77 Data (incomplete) | | | | | |
| S78 | 63.6 | 34.3 | 10.9 | 52.7 | -- |
| Arthur 71 | 67.2 | 35.7 | 11.5 | 50.4 | -- |
| Avg. Check | 66.9 | 36.5 | 11.8 | 51.2 | -- |

NOTES: Locations tested include: Carrollton and Sikeston, Missouri; Fort Branch, Tipton and Vincennes, Indiana; and Loogootee, Illinois.

Check samples include various combinations of: Abe, Arthur, Arthur 71, Beau, Benhur, Blueboy, Blueboy II, Coker 68-15, Double Crop, Fredrick, Funk W504, McNair 3001, Monon, Oasis, Stadler and Stoddard.

Methods: Milling - Quadramat Sr. Mill
Protein - Udy method
AWRC - Micro method on milled flour
Cookie Diameter - Total diameter of two cookies

Table 3

Results of Quality Testing on S78 from Other Labs

Other Lab A

| Avg. '74 Data | Wheat Protein (%) | Particle Size Index (%) | AWRC (%) | Cookie Diam. (cm.) |
|---|---|---|---|---|
| S78 | 11.3 | 28.6 | 65.1 | 17.2 |
| Arthur 71 | 12.3 | 30.5 | 66.0 | 17.2 |
| Avg. Check | 12.7 | 30.7 | 64.5 | 17.4 |
| **Avg. '75 Data** | | | | |
| S78 | 9.4 | 28.9 | 62.9 | -- |
| Arthur 71 | 10.0 | 31.1 | 60.7 | -- |
| Avg. Check | 10.0 | 28.9 | 60.6 | -- |

Other Lab B

| Avg. '74 Data | Flour Protein (%) | Viscosity | Ash | Spread Factor (w/t) |
|---|---|---|---|---|
| S78 | 9.50 | 78 | .404 | 7.39 |
| Arthur 71 | 9.94 | 72 | .408 | 8.66 |
| Avg. Check | 10.35 | 102 | .410 | 8.41 |
| **Avg. '75 Data** | | | | |
| S78 | 7.88 | 46 | .365 | 9.22 |
| Arthur 71 | 8.45 | 64 | .365 | 9.91 |
| Avg. Check | 8.42 | 59 | .380 | 9.57 |

NOTES:

Cookie testing at Lab A and all testing at Lab B was conducted on flour milled by Pioneer.

Locations tested include: Loogootee, Illinois and Vincennes, Indiana.